

Semi-Automated Map Layout Generation Using ArcObjects and VB.NET

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Outline

Purpose

Purpose

Functionality

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Code Specifications

Minimizing User Input

Implementation

Setting Up the Window in ArcMap

Dockable Window Options

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Motivation

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To incorporate a quick, efficient, and easy to use dockable window or interface that allows the user to create a simple, but effective, map layout to be exported or saved as a deliverable.

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- Allows for more thinking and less clicking
- Little to no adjustments made by the user
- Adds in the map elements automatically (map title, legend, author, etc.)

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This will be an add-in for Esri's ArcMap (10.4) software. Current options for generating map layouts *can* take considerable time for the user.

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All Customizable

1. The required map elements

- Title
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 - Subtitle
 - Data Sources
 - Descriptive Text
 - Page Orientation
 - Page Size

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All Customizable

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 - Title
 - Author
 - Date
 - Projection
 - Scalebar
 - North Arrow
 - Legend
 2. Other elements and options
 - Subtitle
 - Data Sources
 - Descriptive Text
 - Page Orientation
 - Page Size
- Some or all of these map elements will either be added automatically, included as specified by the user, or omitted if unwanted.
 - Standard map elements such as the North arrow, legend, and scalebar will be automatically added without user input. These can be manually deleted if unwanted.

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Technology Used

- Esri ArcGIS Desktop (ArcMap 10.4)
- Visual Studio 2015, Community Edition
- ArcObjects SDK (.NET)
- VB.NET programming language

Libraries Referenced

- **Carto**—Primary library for page layout
- ArcMapUI
- Catalog
- esriSystem
- Display
- Geometry
- Geodatabase
- stdole

Methodology

- Two ArcMap Add-ins:
 1. Button add-in: opens the dockable window
 2. Dockable window add-in: creates the map layout
- The button add-in allows the user to close-out the dockable window, and is available if the user forgets to close the dockable window with the tab option.
- Each option in the dockable window is written in VB.NET as a separate, private function that is called by the map generating button “on click” .

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- Users choose different options for the map layout (all are optional; if left blank, nothing will happen). The user specifies which options will be included (to some extent) within the dockable window interface.
- If the “Map Document Properties...” window has been filled out, then this will be automatically filled into the window.
 - This method allows for the most powerful use of this script, as the result requires *no additional input* by the user.

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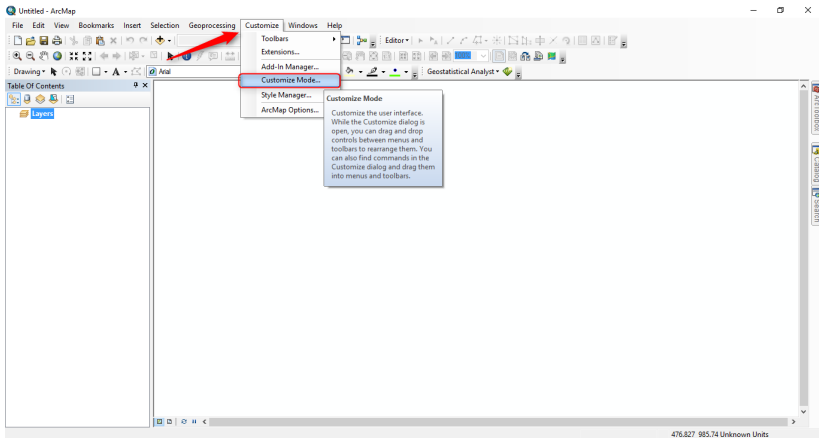
Adding the Dockable Window to ArcMap

Procedures

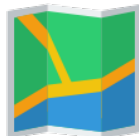
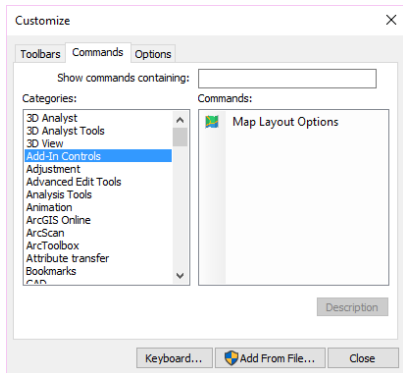
1. Open `MapLayout_Taliceo.sln` and navigate to Build → Build Solution¹.
2. Open ArcMap. 10.4. Go to Customize → Customize Mode... → Commands → Add-In Controls.
3. Drag and drop Map Layout Options button to the Layout toolbar.

¹This only needs to be done the first time.

Adding the Dockable Window to ArcMap



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Adding the Dockable Window to ArcMap

Map Layout Window

Partially Automated Map Layout

Title:

Subtitle:

Author:

Credits:

Text:

Legend Alignment:

Text Box Alignment:

Page Orientation:

Portrait Landscape

Page Size:

To Layout View... Make a Map!

Export to PDF or Image

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To Layout View... Make a Map!

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Legend & Text Box Alignment

- Bottom-Left
- Bottom-Right
- Top-Left
- Top-Right

Page Size

- Letter (8.5in. x 11in.)
- Legal (8.5in. x 14in.)
- Tabloid (11in. x 17in.)

Summary

- This ArcMap add-in creates a quick method of creating a map layout that incorporates all of the essential map elements.
- This program has the capability of choosing different page sizes and layouts.
- There is also the option of exporting to PDF or other graphic.
- Outlook
 - I can further improve on this by adding more page size options, as well as other aesthetic options.
 - I can update this program to work with ArcMap 10.5 and ArcGIS Pro in the future.

For Further Reading I



Chang, Kang-Tsung. *Programming ArcObjects with VBA: A Task-Oriented Approach*. 2nd ed. Boca Raton: CRC Press, 2008. Print.



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<https://gis.stackexchange.com/questions/46649/data-view-layout-view-changes-arcmap-10>.



For Further Reading II



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<http://support.esri.com/technical-article/000007581>.



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<http://edndoc.esri.com/arcobjects/9.2/NET/ca849e1d-5da3-4b64-90da-7a0cad7804f5.htm>.